

## REMARKS/ARGUMENTS

### In the Specification:

In the specification, paragraph [0003] has been amended to correct a typographical error.

### In the Drawing Figures:

In amended Figure 3, the top margin and the character and size of the reference characters and reference character lines has been corrected as required by the Draftsperson's patent drawing review. Unnecessary markings have been removed. No new material has been added.

### In the Claims:

Claims 19-36 are pending in the present application. Claims 1-18 have been withdrawn as a result of an earlier restriction requirement. Claims 19 and 21 have been amended. Claims 24-36 have been added.

In view of the Examiner's earlier restriction requirement, the Applicant subsequently resubmitted claims 1-18 in a divisional application.

### Rejection of Claims 19-23 Under 35 U.S.C. § 103(a)

The Examiner rejected claims 19-23 Under 35 U.S.C. § 103(a) as being unpatentable over Thurner (US 4,721,150) in view of Hayes (US 5,531,085). As the Applicant does not believe Thurner in view of Hayes to teach or suggest the subject matter of claims 19-23, the rejection is respectfully traversed.

Thurner does not teach a method for ensuring that a sprayable material is consistently supplied to the emitter of a mold spraying system at a sufficient pressure, as is taught by the present invention. Thurner teaches a spraying system that utilizes a gravity feed to deliver the sprayable material to a piston pump that is located substantially at a molding machine. The source of sprayable material, or materials, is not pressurized prior to reaching the pump. Rather, it is delivered solely by the gravitational flow of the material from an overhead tank(s) to the subjacent pump. The pump, *alone*, is then left to pressurize the sprayable material and supply it as needed to the spray unit. Thus, the system and method of Thurner does not alleviate the problem described by the present application: namely, that when a molding machine is running with a short cycle time, it can be difficult for a pump to consistently deliver the sprayable material to a spray head or emitter at a sufficient pressure. The molding machine may cycle so quickly that the pump is not able to refill and/or pressurize enough of the material to adequately supply the spray head in between each molding cycle.

In contrast, the present invention does not rely on the booster unit (i.e., the chamber and force exerting cylinder) as the *only* means of pressurizing the sprayable material. In the present invention, the sprayable material is not initially supplied to the molding machine (emitter) via gravity but, rather, by pressurized means, such as a pump. More particularly, unlike Thurner, the present invention places a source of pressurized material in communication with the emitter of the spraying system. Thus, even without the booster unit, sprayable material is supplied to the emitter at some pressure. The booster unit then acts as a pressure increasing means that can be used

if necessary to ensure that the sprayable material is provided to the emitter at least at some predetermined minimum pressure.

As discussed in the present application, it has been found that during the spraying operation it is often difficult to adequately maintain the pressure of the anti-solder and die-lubricant materials, for example, that are supplied to the spray head. This can be caused, for example, by a pressure drop that occurs as a result of transporting the sprayable material(s) across a considerable distance from a remote storage area to the die-casting machine with which they will be used. In addition, the relatively high specific gravity of these materials in comparison to air, generally makes them more difficult to transport over long distances at substantial pressure. The problems caused by these phenomena may be exacerbated when the molding machine is running a very short cycle time.

To ensure that the sprayable material(s) is consistently supplied to the emitter at an adequate pressure, *the present invention employs **both** a pressurized source of sprayable material(s) **and** a controlled pressure booster.* Thurner does not teach or suggest such a method. Further, in contrast to the Examiner's assertion, the Applicant respectfully submits that Thurner combined with Hayes also fails to teach or suggest the method taught by the present invention. First, the Applicant submits that there would be no motivation to combine Thurner with Hayes, as Thurner specifically teaches the use of a gravity feed system whereby "expensive and energy consuming conveying means are rendered superfluous." (See Thurner, column 2, lines 28-32). Consequently, there would be no motivation or suggestion to combine Thurner with Hayes in order to create

a mold spraying system having a pressurized source of material. In fact, Thurner teaches away from such a system.

In any event, even if the references are combined, Thurner in view of Hayes fails to teach the subject matter of the rejected claims. The teachings of Hayes fail to overcome the deficiencies of Thurner, already pointed out above. Hayes merely relies on a pump/accumulator assembly located at a remote lubricant reservoir to supply pressurized material to a spray head. Thus, Hayes suffers from the very problems that are considered and overcome by the present invention. Hayes does not teach or suggest the use of a pressure boosting cylinder (or any type of pressure booster) in conjunction with a source of pressurized sprayable material to ensure that material of adequate pressure is consistently supplied to an emitter.

The Applicant must also respectfully disagree with the Examiner's assertion that Thurner teaches a speed control device for controlling the speed at which its cylinder advances and retracts. The only control device taught by Thurner is the adjustable stops that can be employed to control the total travel of the cylinder plunger and, thus, the cylinder volume. (See Thurner, column 6, lines 52-57). In this manner, the amount of sprayable material pressurized by the cylinder in Thurner can be regulated - but the speed of the cylinder's advance cannot. The Applicant can find no teaching or suggestion in Thurner to use a speed control device. As such, the speed of the cylinder's advance and retraction when using the Thurner system would simply be a direct result of the air pressure supplied thereto.

Therefore, Thurner fails to teach the method of the present invention. There is also no motivation or suggestion to combine Thurner with Hayes, as Thurner teaches

away from the use of a pressurized source of material. And, even if combined, Thurner in view of Hayes still fails to teach or suggest the use of a pressurized source of sprayable material in conjunction with a pressure boosting cylinder to consistently supply a mold spraying system with material at an adequate pressure. As such, the Applicant respectfully submits that Thurner in view of Hayes cannot support a rejection of claims 19-23 under 35 U.S.C. § 103(a).

The Applicant has amended claims 19 and 21, and has added new claims 24-36. The Applicant has also distinguished the subject matter of the present invention over the teachings of the references cited as prior art by the Examiner.

Therefore, the Applicant respectfully submits that the present application is now in condition for allowance, and entry of the present amendment and allowance of the application as amended is earnestly requested. Telephone inquiry to the undersigned in order to clarify or otherwise expedite prosecution of the present application is respectfully encouraged.

Respectfully submitted,

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